

CLAIMS

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What is claimed is

1. A protein or a salt thereof, which (i) belongs to a member of MMPs having the activation capability of pro MMP-2, (ii) has an activity identical with or substantially equivalent to naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating factor, excluding MT-MMP-1.
2. The protein according to Claim 1, wherein the protein has a biological property or primary structural conformation identical with or substantially equivalent to that of native MT-MMP-3 or a salt thereof.
3. The protein according to Claim 1 or Claim 2, wherein a C-terminal area of the protein has (i) an amino acid sequence from Ala⁵⁶¹ to Phe⁵⁸⁴ in the sequence represented by SEQ ID NO: 2 in the Sequence Listing or (ii) an amino acid sequence substantially equivalent thereto.
4. The protein according to any of Claims 1 to 3, wherein the protein is MT-MMP-3 or a salt thereof which has (i) an amino acid sequence represented by SEQ ID NO: 2 in the Sequence Listing or (ii) an amino acid sequence equivalent thereto.
5. The protein according to any of Claims 1 to 4, wherein the protein is the product of prokaryotic or eukaryotic expression of an exogenous DNA sequence.
6. The protein according to any of Claims 1 to 5, wherein the protein has (i) the amino acid sequence of SEQ ID NO: 2 in the Sequence Listing or (ii) the substantially same amino acid sequence.
7. A partial peptide of the protein according to any of Claims 1 to 6 or a salt thereof.
8. A nucleic acid comprising a nucleotide sequence coding for the protein or the partial peptide according to any of Claims 1 to 7.
9. The nucleic acid according to Claim 8, which is a DNA gene having a nucleotide sequence coding for MT-MMP-3 according to any of Claims 2 to 4.
10. The nucleic acid according to Claim 8 or 9,

having (i) an open reading frame region of the nucleotide sequence represented by SEQ ID NO: 1 in the Sequence Listing or (ii) a nucleotide sequence having an activity substantially equivalent thereto.

11. A vector comprising the nucleic acid according to any of Claims 8 to 10.

12. A transformant or transfectant harboring (i) the nucleic acid according to any of Claims 8 to 10 or (ii) the vector according to Claim 11.

13. A process for producing the protein according to any of Claims 1 to 6 or a partial peptide thereof, which comprises:

- (i) culturing the transformant or transfectant according to Claim 12 in a nutrient medium capable of growing said transformant or transfectant, and
- (ii) producing, as a recombinant species, the protein according to any of Claims 1 to 6 or a partial peptide thereof, including MT-MMP-3 or a salt thereof;

14. An antibody against (a) a protein or a salt thereof which (i) belongs to a member of MMPs having the activation capability of pro MMP-2, (ii) has an activity identical with or substantially equivalent to naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating factor, excluding MT-MMP-1, or (b) a partial peptide of said protein or a salt thereof.

15. The antibody according to Claim 14, wherein the antibody is against the protein which has an activity or a primary structural conformation identical with or substantially equivalent to that of MT-MMP-3 or a salt thereof.

A 16. The antibody according to Claim 14 or 15, wherein the antibody is against the protein that is MT-MMP-3 or a salt thereof having (i) an amino acid sequence represented by SEQ ID NO: 2 in the Sequence Listing or (ii) an amino acid sequence substantially equivalent thereto. *Claim 14*

A 17. The antibody according to any of Claims 14 to 16, wherein the antibody is against the protein which is a product obtained by expressing a foreign DNA sequence in

prokaryotes or eukaryotes.

Claim 14
A 18. The antibody according to ~~any of Claims 14 to~~
~~A 17~~, wherein the antibody is against the protein which has (i)
the amino acid sequence of SEQ ID NO: 2 in the Sequence Listing
or (ii) the substantially same amino acid sequence.

Claim 14
A 19. The antibody according to ~~any of Claims 14 to~~
~~A 18~~, wherein the antibody is against a partial peptide of the
protein or a salt thereof.

Claim 14
A 20. The antibody according to ~~any of Claims 14 to~~
~~A 19~~, wherein the antibody is anti-serum.

Claim 14
A 21. The antibody according to ~~any of Claims 14 to~~
~~A 19~~, wherein the antibody is monoclonal.

Claim 14
A 22. The antibody according to ~~any of Claims 14 to~~
~~A 19 and 21~~, which is a monoclonal antibody against MT-MMP-3
or a salt thereof.

23. A method for producing an antibody against (a)
a protein or a salt thereof which (i) belongs to a member of
MMPs having the activation capability of pro MMP-2, (ii) has an
activity identical with or substantially equivalent to
naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating
factor, excluding MT-MMP-1, or (b) a partial peptide of said
protein or a salt thereof, which comprises employing an antigen
selected from the group consisting of said protein, said
partial peptide and a salt thereof to raise the antibody
thereagainst.

24. A method for producing the antibody according
to Claim 21 ~~or 22~~, which comprises

(A) fusing an antibody-producing cell obtained from
an immunized animal with an immortal cell, wherein said
antibody is against (a) a protein or a salt thereof which (i)
belongs to a member of MMPs having the activation capability of
pro MMP-2, (ii) has an activity identical with or substantially
equivalent to naturally-occurring MT-MMP, and (iii) is a
pro MMP-2 activating factor, excluding MT-MMP-1, or (b) a
partial peptide of said protein or a salt thereof and said
animal is immunized with the protein, the partial peptide or a
salt thereof, and

(B) selecting an immortal hybrid cell capable of an antibody against a protein including MT-MMP-3.

25. A method for detecting and/or measuring

MT-MMP-3, which comprises using (A) a reagent selected from the group consisting of (a) a protein or a salt thereof which (i) belongs to a member of MMPs having the activation capability of pro MMP-2, (ii) has an activity identical with or substantially equivalent to naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating factor, excluding MT-MMP-1, and (b) a partial peptide of said protein or a salt thereof, or (B) a reagent selected from the group consisting of the antibodies according to ^{Claim 14} ~~any of Claims 14 to 22.~~

26. A labeled antibody against MT-MMP-3 for the method for detecting and/or measuring MT-MMP-3 (the detection and/or measurement of MT-MMP-3) according to Claim 25.

27. A labeled protein or a salt thereof, for the method for detecting and/or measuring MT-MMP-3 according to Claim 25, wherein said labeled protein (i) belongs to a member of MMPs having the activation capability of pro MMP-2, (ii) has an activity identical with or substantially equivalent to naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating factor, excluding MT-MMP-1, or a labeled partial peptide of said protein or a salt thereof, for the method according to Claim 25.

28. A labeled nucleic acid for detection and/or measurement of MT-MMP-3 expressing cells and/or tissues, wherein said nucleic acid encodes (A) a protein which (i) belongs to a member of MMPs having the activation capability of pro MMP-2, (ii) has an activity identical with or substantially equivalent to naturally-occurring MT-MMP, and (iii) is a pro MMP-2 activating factor, excluding MT-MMP-1, or (B) a partial peptide of said protein.

29. A nucleic acid according to Claim 28, which is a probe for hybridization.

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